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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,014	12/31/2003	Thomas A. Mitchell	6536-139	9342
26486	7590	03/14/2006	EXAMINER	
PERKINS, SMITH & COHEN LLP ONE BEACON STREET 30TH FLOOR BOSTON, MA 02108			GEISEL, KARA E	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/750,014	MITCHELL, THOMAS A. 	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kara E. Geisel	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 31 December 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-4, 6, 8-12, 14, 16-20, 22, 24 and 26-29 is/are rejected.
- 7) Claim(s) 5, 7, 13, 15, 21, 23 and 25 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 31 December 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1203.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Preliminary Amendment***

The preliminary amendment filed on December 31<sup>st</sup>, 2003, has been entered into this application.

### ***Information Disclosure Statement***

The information disclosure statement filed on December 31<sup>st</sup>, 2003 has been considered by the examiner.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 8, and 26-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ichimura et al. (USPN 5,329,353).

In regards to claims 1 and 27, Ichimura discloses a hyperspectral imager (figs. 6A, 14; column 3, lines 1-6) comprising a first optical sub-system (fig. 14, 51-52), at least one slit element (2), said first optical sub-system being capable of imaging, onto said at least one slit element, electromagnetic radiation emanating from a source (Ls2, S), a second optical sub-system (fig. 6A would be 50 in fig. 14), said second optical sub-system (7) being capable of substantially collimating, at a center plane, electromagnetic radiation emanating from said at least one slit element (2), at least one reflective dispersive element located substantially at the center plane (4), said second optical sub-system also being capable of imaging, onto an image surface (6), the electromagnetic radiation reflected from said at least one reflective dispersive element (4), and, at least one detecting element (6) located substantially at the

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image surface, said at least one detecting element being capable of detecting dispersed electromagnetic radiation reflected from said at least one reflective dispersive element.

In regards to claims 2, 3 and 26, Ichimura discloses an imager and a method for detecting wavelength dependent content of electromagnetic radiation, wherein the first optical sub-system has a first optical axis (fig. 6a, line going through slit to grating), and the second optical sub-system has a second optical axis (fig. 14; substantially aligned with the slit), the second optical axis being substantially parallel, and coincident, to the first optical axis.

In regards to claim 4, the imager (fig. 9b, wherein 1 would be the embodiment of fig. 6a) further includes a first sub-housing at least one optical component from said first optical sub-system being positioned within said first sub-housing (the housing being the box enclosing lens 11), said first sub-housing defining a first interior longitudinal axis (center axis of the lens 11), an optical axis of said at least one of optical component from said first optical sub-system being substantially coincident with said first interior longitudinal axis, and a second sub-housing (the housing being the box enclosing the spectral analyzer of fig. 6a), said at least one slit element (2) and at least one optical component from said second optical sub-system (7) being positioned within said second sub-housing, said second sub-housing defining a second interior longitudinal axis (fig. 6a, line going through slit to grating) an optical axis of said at least one of optical components from said second optical sub-system being substantially coincident with said second interior longitudinal axis, said second sub-housing being attached to said first sub-housing (fig. 9b), said second interior longitudinal axis being substantially coincident with said first interior longitudinal axis.

In regards to claim 8, the at least one detecting element is positioned within the second sub-housing (fig. 9b, wherein 1 would be the embodiment of fig. 6a, 6).

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichimura et al. (USPN 5,329,353).

In regards to claim 6, Ichimura discloses the hyperspectral imager, as discussed above. The invention is silent to having the second sub-housing being removably attached to the first sub-housing. However the examiner takes Official Notice, that this type of segmenting of parts of an imager into removable housings is well known in the art, and would furthermore, be done in order to remove a broken or non-functioning component to replace it with a new component. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the first and second sub-housing be removably attached to each other in order to remove a broken or non-functioning component to replace it with a new component.

Claims 9-12, 14, 16-20, 22, 24, and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichimura et al. (USPN 5,329,353) in view of Lobb (USPN 6,288,781).

In regards to claims 9 and 17, Ichimura discloses the hyperspectral imager, as discussed above. The invention is silent to a redirecting/transmitting optical element optically disposed between the second optical subsystem and the image surface. However, redirecting elements, such as beams splitters are well known in the art, and furthermore are used in order to direct parts of the beam to different detectors to allow for wider spectral detection.

For example, Lobb discloses a hyperspectral imager (fig. 9). The hyperspectral imager includes a reflective dispersive system (810, 815), that directs light through an optical sub-system (807) a

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redirecting/transmitting optical element (902) capable of imaging a transmitted portion of radiation to a first image surface (907), and imaging a reflected portion of radiation to a second image surface (908), and two detectors positioned at each of the imaging surfaces (907, 908). This is done in order to allow for wider spectral detection (columns 11-12, lines 50-67 and 1-15, respectively). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in Ichimura's hyperspectral imager a redirecting/transmitting optical element optically disposed between the second optical subsystem and the image surface, and a second detector, in order to direct parts of a beam to the two different detectors to allow for wider spectral detection.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in Ichimura's a redirecting optical element optically disposed between the second optical subsystem and the image surface in order to allow more flexibility in the design of an optical system therefore allowing the system to become more compact.

In regards to claims 10-11, and 18-19, the first optical sub-system has a first optical axis (fig. 6a, line going through slit to grating), and the second optical sub-system has a second optical axis (fig. 14; substantially aligned with the slit), the second optical axis being substantially parallel, and coincident, to the first optical axis.

In regards to claims 12 and 20, the imager (fig. 9b, wherein 1 would be the embodiment of fig. 6a) further includes a first sub-housing at least one optical component from said first optical sub-system being positioned within said first sub-housing (the housing being the box enclosing lens 11), said first sub-housing defining a first interior longitudinal axis (center axis of the lens 11), an optical axis of said at least one of optical component from said first optical sub-system being substantially coincident with said first interior longitudinal axis, and a second sub-housing (the housing being the box enclosing the spectral analyzer of fig. 6a), said at least one slit element (2) and at least one optical component from said second optical sub-system (7) being positioned within said second sub-housing, said second sub-housing defining

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a second interior longitudinal axis (fig. 6a, line going through slit to grating) an optical axis of said at least one of optical components from said second optical sub-system being substantially coincident with said second interior longitudinal axis, said second sub-housing being attached to said first sub-housing (fig. 9b), said second interior longitudinal axis being substantially coincident with said first interior longitudinal axis.

In regards to claims 14 and 22, Ichimura discloses the hyperspectral imager, as discussed above. The invention is silent to having the second sub-housing being removably attached to the first sub-housing. However the examiner takes Official Notice, that this type of segmenting of parts of an imager into removable housings is well known in the art, and would furthermore, be done in order to remove a broken or non-functioning component to replace it with a new component. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the first and second sub-housing be removably attached to each other in order to remove a broken or non-functioning component to replace it with a new component.

In regards to claims 16 and 24, the at least one detecting element is positioned within the second sub-housing (fig. 9b, wherein 1 would be the embodiment of fig. 6a, 6).

In regards to claim 28, the electromagnetic radiation reflected from the at least one reflective dispersive element comprises at least two spectral bands of electromagnetic radiation (Lobb column 12, lines 1-8).

In regards to claim 29, the transmitted portion of the electromagnetic radiation reflected from the at least one reflective dispersive element comprises on spectral band from the at least two spectral bands (Lobb, column 12, lines 1-8).

*Allowable Subject Matter*

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Claims 5, 7, 13, 15, 21, 23, 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claims 5, 13 and 21, the prior art of record, taken alone or in combination, fails to disclose or render obvious a hyperspectral imager comprising a third sub-housing, at least another optical component from a second optical sub-system and at least one reflective dispersive element being positioned within the third sub-housing, a second sub-housing being attached to the third sub-housing, the second interior longitudinal axis being substantially coincident with a third interior longitudinal axis., in combination with the rest of the limitations of claims 5, 13 and 21.

As to claim 25, the prior art of record, taken alone or in combination, fails to disclose or render obvious a hyperspectral imager wherein a first optical sub-system is a catadioptric sub-system, in combination with the rest of the limitations of claim 25.

*Additional Prior Art*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is McCarthy (US Pubs 2003/0184748).

McCarthy discloses a hyperspectral imager comprising a first optical sub-system, at least one slit element, said first optical sub-system being capable of imaging, onto said at least one slit element, electromagnetic radiation emanating from a source, a second optical sub-system, said second optical sub-system being capable of substantially collimating, at a center plane, electromagnetic radiation emanating from said at least one slit element, at least one reflective dispersive element located substantially at the center plane, said second optical sub-system also being capable of imaging, onto an image surface, the electromagnetic radiation reflected from said at least one reflective dispersive element, and, at least one detecting element located substantially at the image surface, said at least one detecting element being

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capable of detecting dispersed electromagnetic radiation reflected from said at least one reflective dispersive element.

*Conclusion*

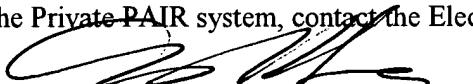
Several facts have been relied upon from the personal knowledge of the examiner about which the examiner took Official Notice in this Office Action mailed. Applicant must seasonably challenge well known statements and statements based on personal knowledge when they are made by the Board of Patent Appeals and Interferences. *In re Selmi*, 156 F.2d 96, 70 USPQ 197 (CCPA 1946); *In re Fischer*, 125 F.2d 725, 52 USPQ 473 (CCPA 1942). See also *In re Boon*, 439 F.2d 724, 169 USPQ 231 (CCPA 1971) (a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice). If applicant does not seasonably traverse the well-known statement during examination, then the object of the well-known statement is taken to be admitted prior art. *In re Chevenard*, 139 F.2d 71, 60 USPQ 239 (CCPA 1943). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution. Thus, applicant is charged with rebutting the well-known statement in the next reply after the Office action in which the well-known statement was made.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**HWA (ANDREW) LEE**  
**PRIMARY EXAMINER**

for

Gregory J. Toatley, Jr.  
SPE  
Art Unit 2877

K.G.  
KEG  
March 10, 2006